Creativity and the management of attention with social media

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Abstract

Social media has transformed the web into a hyper-connected social space that is inundated by a flood of social signals that reflects the activities of the members, and contributes to the dynamic of the interaction. In this context, the participants decode, process and emit information for making sense of this social world, and for acting upon it. The objective of this paper is to explore the implication of this setting for an application in the context of supporting creativity online. More specifically, we examine the effect of the massive circulation of this social information and its management on systems supporting the collective creative process online.

Keywords: social media, social attention, collective creativity, open innovation, collective intelligence, social signaling.

1. Introduction

Social media has contributed to the transformation of the web from a giant information space into a massive social space in which people are offered "countless" ways to engage into interaction with others. In this hyper-connected web, people are getting numerous solicitations and opportunities to engage into a social exchange. They are offered the possibility to "present their self" (Goffman 1959) so as to create a good impression and increase their social presence. Furthermore, users are making sense of this world by decoding and processing a flood of information that are generated in these spaces (e.g. tweets and activity feeds, presence mechanisms). In this context, users become both the receptors and emitters of a variety of (mostly nonlinguistic) social signals (Pentland 2008) that participate to the functioning of the social processes by intervening in the perception of identity, the forming of trust (Donath 2007), the synchronization in the social interaction, or the motivation to participate for the different actors.

This situation has significant implication on the nature of the interaction both at the individual and the collective level. First it produces the conditions for a massive interaction overload (Nabeth & Maisonneuve 2011). People, that are in a state of constant "social vigilance", are at risk of having their attention (considered as the scarce resource in the knowledge economy (Davenport & Beck 2001)), completely consumed and absorbed in conducting "social" activities, leaving little time for doing the things generating more substantial value. The knowledge worker and the organization are therefore confronted with the dilemma of being distracted and losing productivity if they engage too much in this interaction, or the risk of being left aside if they do not.

Second, this state of massive transparency of other people actions induces some important implications in the dynamics of the interaction. On one hand social media has been associated to the promotion of a collective culture leading to the suppression individualism in favor of a more collective vision in which the individual disappears behind the crowd, a vision that is for instance strongly encouraged in a system such as Wikipedia. In this case, the dynamic of interaction can be affected by different phenomena such as the hive effect and social loafing (Karau & Williams 1993). For instance Jaron Lanier in his essay on about digital Maoism in "collective systems" (Tumlin et al. 2007) has pointed out the danger that depersonalization can lead to associate truth to the general belief of the majority (the wisdom of crowds) and to shut down "divergent thinking". Social loafing, the phenomenon refereeing to people exerting less effort when they work in a group than when they work alone, may also be considered. This is interesting in particular in a context in which the access to a

plentiful amount of information is cheap: people may not be inclined to contribute if they believe that they can rely on the work of others, and if their contributions will get little attention given the massive amount of information already available. On the other hand social media has also been suspected to be the reign of "peopleisation", individualism, to flatter narcissism, and to inflate the importance of the form in detriment of the substance. _The winners at this "game" are the best at creating the buzz, at self-promoting themselves, and at grabbing other people's attention. At the end, this state of transparency may conduce to a reinforcement of a Pareto "the winners take all" phenomenon, in which only a small fraction of the population (the stars) is actively participating to the system and collecting the biggest chunk of the value, and asphyxiating the activities of the others.

In this paper, we would like to explore and discuss the implication of this socially hyper-connected web on the creative process. Indeed the social web represents a space increasingly supporting co-creation and innovation, thanks to the progressive adoption of "open innovation" by the enterprises and availability of services and tools aiming at supporting the creative process. For instance platforms like OpenIdeo, TopCoder or Quirky already offer the possibility to develop creative ideas or products via team collaboration (Maher, 2011), and different creativity tools (such as concept mapping tools, digital post-it tools) are now increasingly offered for a collective use.

2.   Supporting the creative process

Creativity can be associated to a phenomenon in which people are imagining "something" that is "genuinely new". Formalizing creativity, and more specifically defining a deterministic process or ordering it (Nov and Jones 2006), appears a difficult undertaking. Creativity is about producing things that "never existed before", and that are not the replication of something that existed in the past. Creativity therefore tends to rely on heuristics rather than on algorithms, and supporting creativity should be mainly about creating the conditions to make it happen. One of the more important means is the establishment of a social interaction process. Creativity can be increasingly considered as a collective process involving a variety of participants that will contribute to co-create knowledge and to innovate (Maher 2012), rather than to result of the isolated activity of a lonely individual. Indeed, recent literature emphasize that collectives are more inventive than isolated individuals because their members bring diverse knowledge related to the shared task. Inventions emerge out of their interactions, assuming that synergy between the members of the collective is realized. The pooling of knowledge from individuals but also the properties of the network of interactions and properties of individual agents (e.g. cognitive capacity) influence the rate of invention (Bhattacharyya & Ohlsson, 2010). This social process also enables the exploitation of different types of tacit knowledge that different actors possess (Nov and Jones 2006). In this context the effectiveness of creativity has also been associated with diversity which is known to "generally stimulates innovation and creativity", although it can also represent "one of the primary obstacles to effective distributed collaboration" (Al-Ani & Redmiles 2009). Finally (but not the least, since we could also have mentioned the role of emotion), trust represents another element that has a significant importance since "trust must exist for the open expression of innovative ideas and establishment of idea credibility". The establishment of trust is notably pivotal in the case of "teams that have never met face-to-face" and "have only a very limited time to accomplish a task". (Schumann et al. 2012).

Different processes have however been imagined to guide creativity along the phases such as the ones proposed by Csikszentmihalyi (1996): the preparation phase (e.g. collecting information); the incubation phase (internalizing the problem, and letting the unconscious mind to make his work); the illumination phase (the Aha moment, Eureka!, i.e. when ideas find their way to the "conscious mind"); the evaluation phase (the stage in which the idea is analyzed and validated); and the elaboration phase (the "perspiration phase" in which the idea is operationalized).

Similar processes are facilitated in the different open platforms (such as OpenIdeo) which are aimed at supporting creativity and (open) innovation. In all these phases the social process is central in contributing to the collective collection of information, the emergence and confrontation of ideas, their evaluation and their operationalization.

Yet, this support of online creativity is relying on the same mechanisms and therefore the same limitations as the ones we have underlined in the introduction in the case of social media systems.

These limitations originate from the important level of the information (e.g. the social signals) that are available, such as: (1) the risk of interaction overload; and the risk of the creative people to have their attention dispersed in too many different things; (2) the effects associated to the massive level of transparency that exist on these systems and that in a creative context may for instance lead to a diminution of radical new ideas (given the enforcement of a social pressure to conform to the crowd) and phenomena of buzz that would only facilitate the propagation of the ideas that are the more fashionable, or originating from the more established actors.

3. Supporting Creativity: Some directions and questions

We are still now in a preliminary phase of our reflection about how the previous work on the management of attention and on the functioning of social media can inform us in the design of systems that are more effective at supporting collective creativity, notably in the new platforms that have emerged. In this section, we will only present briefly different approaches that have been elaborated in the context of supporting human attention online, and we will conclude by identifying a series of directions for future work.

Different approaches have been elaborated to manage attention (i.e. how to allocate the cognitive resources to manage the different signals) in a more effective manner and to reduce the interaction overload. They include the use of attentive user interfaces (Vertegaal et al. 2006), or the definition of models to better support attention in organizations (Roda & Nabeth 2008; Davenport & Beck 2001), and their application to a social context (Nabeth & Maisonneuve 2011). In the former case, it consists in the creation of interfaces and the implementation of mechanisms that are able to better take into account the human cognitive limitations such as human perception (such a system can filter information and display it at the right level of prominence) or limited multi-tasking capabilities (the systems may for instance decide to delay an interruption in order to reduce the level of distraction). In the latter case the model may consist in supporting the different dimensions of the cognitive process and more specifically:

(1) human perception: via the filtering and the displaying of the information in a way that is attention effective;
(2) reasoning and decision making: offering mechanisms facilitating the decision making, and for instance reducing the cognitive effort;
(3) operation: automating some tasks and therefore "liberating" some human cognitive capacities;
(4) metacognition: helping the individual to improve its practices and being more attention effective.

More recently Razmerita, Nabeth, & Kirchner (2012) have also proposed the use of personalization aimed at refocusing attention of users and supporting them in being more effective and attentive in relation with the tasks and goals they need to perform. Finally current research on analytics (e.g. learning analytics), by allowing us to capture and anlyse our activities (and for instance where we have allocated our attention), may help us in the design of more attention effective systems.

This research conducted in better supporting attention appears to be very relevant for an application for the support of creativity in a collaborative setting. First, because a more effective management of attention can be beneficial to the creative process (we have seen previously that online collective creative activities are also subject to interaction overload). Second, because some of the principles guiding the design of more effective systems can probably be extended to support more directly the creative process and for instance address effects associated to transparency (e.g. implement mechanisms helping to reduce the buzz effect, or the recognition of ideas from the less established actors), but also facilitate diversity and trust.

Another line of investigation could consist in better understanding the articulation of the individual and collective dimension of creativity in the context of social systems. This research could extend the work of Razmerita, Kirchner & Sudzina (2009), on the articulation of personal and collective knowledge management in the Web 2.0, for the collection of ideas.

Finally it could also be fruitful to explore the dynamic of collaboration in a massive "collective system" such as Wikipedia, for which the participants have already been confronted to a series of issues that appear to be particularly relevant to the context of creativity such as: the hive effect pointed by Jaron Lanier and the "censoring" of divergent thinking; or the problem of social loafing and

participation; the quality of the contribution. In this domain a number of reflections are already available (e.g. rules and governance (Kostakis 2010)) that could be applied in the context of creativity. More generally, we could extend this exploration to social media research at large on aspects such as the dynamics of interaction and diffusion in hyperconnected social systems, and in particular better explore the functioning of social signals in social systems.

4.   References

Al-Ani, B., & Redmiles, D. (2009). In Strangers We Trust? Findings of an Empirical Study of Distributed Teams. 2009 Fourth IEEE International Conference on Global Software Engineering, 121–130. doi:10.1109/ICGSE.2009.20Csikszentmihalyi, Mihaly (1996). Creativity : Flow and the Psychology of Discovery and Invention. New York: Harper Perennial.

Bhattacharyya, S., & Ohlsson, S. (2010). Social creativity as a function of agent cognition and network properties: A computer model. Social Networks, 32(4), 263-278. doi: http://dx.doi.org/10.1016/j.socnet.2010.04.001

Davenport, T.H.; Beck, J.C. (2001). The Attention Economy: Understanding the New Currency of Business. Harvard Business School Press.

Donath, J. (2007). Signals in social supernets. Journal of Computer-Mediated Communication, 13(1), article 12. http://jcmc.indiana.edu/vol13/issue1/donath.html

Goffman, Erving (1959). The Presentation of Self in Everyday Life. New York: Doubleday

Karau, S. & Williams, K. (1993). Social loafing: A meta-analytic review and theoretical integration. Journal of Personality and Social Psychology, 65, (4), 681-706.

Kostakis, V. (2010). Peer governance and Wikipedia: Identifying and understanding the problems of Wikipedia's governance. First Monday, 15(3).

Maher, M.L. (2011) Design Creativity Research: From the individual to the crowd. In: Taura, T., Nagai, Y.: Creativity Design 2010, Springer, pp. 41-47.

Maher, M.L. (2012) Computational and Collective Creativity: Who's Being Creative? Proc. of International Conference on Computational Creativity, pp. 67-71.

Nabeth, T., & Maisonneuve, N. (2011). Managing attention in the social web: the AtGentNet approach. In C. Roda (Ed.), Human Attention in Digital Environments (pp. 281–310). Cambridge University Press. doi:10.1017/CBO9780511974519.01

Nov, O. and Jones, M. (2006). Ordering Creativity: Knowledge, Creativity and Idea Generation in the Advertising Industry. International Journal of Product Development 3 (2) 252-262.

Pentland, Alex (Sandy) (2008). Honest Signals: How They Shape Our World (MIT Press, 2008)

Razmerita, L., Kirchner, K., Sudzina, F.: Personal knowledge management: The role of Web 2.0 tools for managing knowledge at individual and organisational levels. In: Online Information Review, Vol. 33, Issue 6, 2009, pp. 1021-1039.

Razmerita, L., Nabeth, T., & Kirchner, K. (2012). *User Modeling and Attention Support: Towards a Framework of Personalization Techniques.* Paper presented at the CENTRIC 2012, The Fifth International Conference on Advances in Human-oriented and Personalized Mechanisms, Technologies, and Services, Lisbon, Portugal.

Roda, Claudia; Nabeth, Thierry (2008); Attention management in organizations: Four levels of support in information systems; In A. Bounfour (Ed.), Organizational Capital : Modelling, Measuring and Contextualising. Routledge (advanced research series in management). pp 214-233

Schumann, J., Shih, P. C., Redmiles, D. F., & Horton, G. (2012). Supporting initial trust in distributed idea generation and idea evaluation. Proceedings of the 17th ACM international conference on Supporting group work - GROUP'12, 199. doi:10.1145/2389176.2389207

Tumlin M., Harris S.R., Buchanan H., Schmidt K (2007); Collectivism vs. individualism in a wiki world: librarians respond to Jaron Lanier's essay 'digital Maoism: the hazards of the new online collectivism, (Johnson K., ed.) Serials Review, vol. 33 issue. 1, s. 45-53 (2007).

Vertegaal, Roel; Shell, J.S.; Chen, D.; Mamuji, A. (2006). Designing for augmented attention: Towards a framework for attentive user interfaces. Computers in Human Behavior 22 (4): 771–789.